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EXTENSION CENTER FOR COMMUNITY VITALITY

Economic Contribution of American Peat Technology

A REPORT OF THE ECONOMIC IMPACT ANALYSIS PROGRAM

Authored by Brigid Tuck with assistance from Merritt Bussiere

IN PARTNERSHIP WITH AMERICAN PEAT TECHNOLOGY

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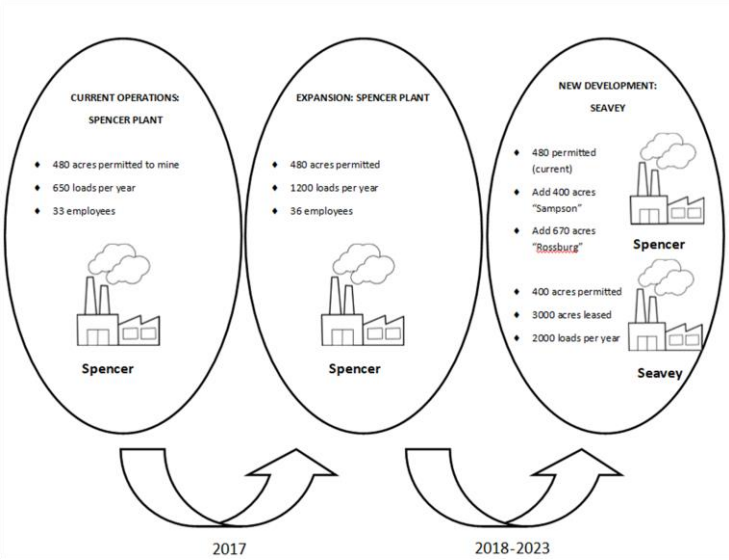
EXECUTIVE SUMMARY: ECONOMIC CONTRIBUTION OF AMERICAN PEAT TECHNOLOGY

American Peat Technology is a peat harvesting company. Demand for the company's products has grown rapidly. As a result, American Peat Technology is expanding. The company currently operates a plant in Spencer Township of Aitkin County (Spencer plant). To increase efficiency and capacity, the Spencer plant is expanding, and the expansion is near completion. American Peat Technology is also actively pursuing the construction of a new plant and harvest area. The facility (Seavey) will access a new peat resource and double the company's employment.



American Peat Technology is interested in understanding the economic value of the Spencer plant in its current community. The company is also interested in the impact of its planned expansion. Thus, American Peat Technology hired the University of Minnesota Extension to measure its economic contribution in the county and in the region. Expansions affect an economy in two ways—through construction and through operations. Construction impacts are short-term, ending when the project is completed. Operation impacts are long-term, continuing as long as the facility is operating.

Extension examined American Peat Technology's contribution in two areas. First, the study examined the impact in Aitkin County. Second, the study examined the impact in the eight-county region (Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine counties).

Aitkin County Contribution

Economic Contribution of Current Operations: In fiscal year 2017, American Peat Technology contributed an estimated $10.1 million to Aitkin County's economy. This includes $2.8 million of income for residents of the county. The company supported 69 jobs. The top industries supported by the company included banking, electric power, and housing.

Economic Contribution of Fully Expanded American Peat Technology: Operations of a fully expanded American Peat Technology will generate an estimated total of $23.4 million of annual economic activity, including $6.3 million in income in Aitkin County. The company will support 161 jobs. A fully expanded American Peat Technology includes operations at Spencer and Seavey. The contributions for each plant are presented next.

Economic Contribution of Expansion at Spencer Plant: Between 2014 and 2017, expansion at the Spencer plant created an estimated $11.0 million of construction-related activity in Aitkin County. It supported 47 jobs and $2.0 million in labor income. Once complete, plant operations will contribute $11.0 million of economic activity to the county's economy, including $3.0 million of labor income. The company's expanded operations will support 76 jobs.

Economic Contribution of Expansion at Seavey: Proposed construction development of the Seavey harvest area and processing facility will generate an estimated $20.9 million in economic activity in the county, including $6.5 million in labor income and 180 jobs. Operationally, the Seavey development will contribute $12.2 million annually to the county. This includes $3.3 million in income and 83 jobs. Once all permits are obtained, development of the Seavey harvest area and plant will take two years.

Eight-County Regional Contribution

Economic Contribution of Current Operations: In fiscal year 2017, American Peat Technology contributed an estimated $18.0 million of economic activity to the economies of Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine counties. This includes $5.1 million of labor income and 95 jobs.

Economic Contribution of Fully Expanded American Peat Technology: Operations of a fully expanded American Peat Technology will contribute an estimated total of $41.4 million of economic activity, including $11.8 million in income to residents in the eight-county region. The company will support 221 jobs. This scenario includes operations of both the Spencer and Seavey facilities.

Economic Contribution of Expansion at Spencer Plant: Expansion at the Spencer plant created an estimated $11.5 million of construction-related activity in the region. It supported 49 jobs and $2.2 million in labor income. The expanded Spencer plant will contribute $19.5 million of activity to the eight-county region, including $5.5 million of labor income. The company's expanded operations will support 104 jobs.

Economic Contribution of Expansion at Seavey: Proposed construction of the Seavey harvest area and processing facility will generate an estimated $22.1 million in economic activity in the region, including $6.9 million in labor income and 190 jobs. Operationally, the plant will contribute $21.8 million annually to the eight-county region. This includes $6.3 million in income and 114 jobs.

The data, analysis, and findings described in this report are specific to the geography, period, and project requirements of American Peat Technology. University of Minnesota Extension neither approves nor endorses the use or application of findings and other contents in this report by other jurisdictions or companies.

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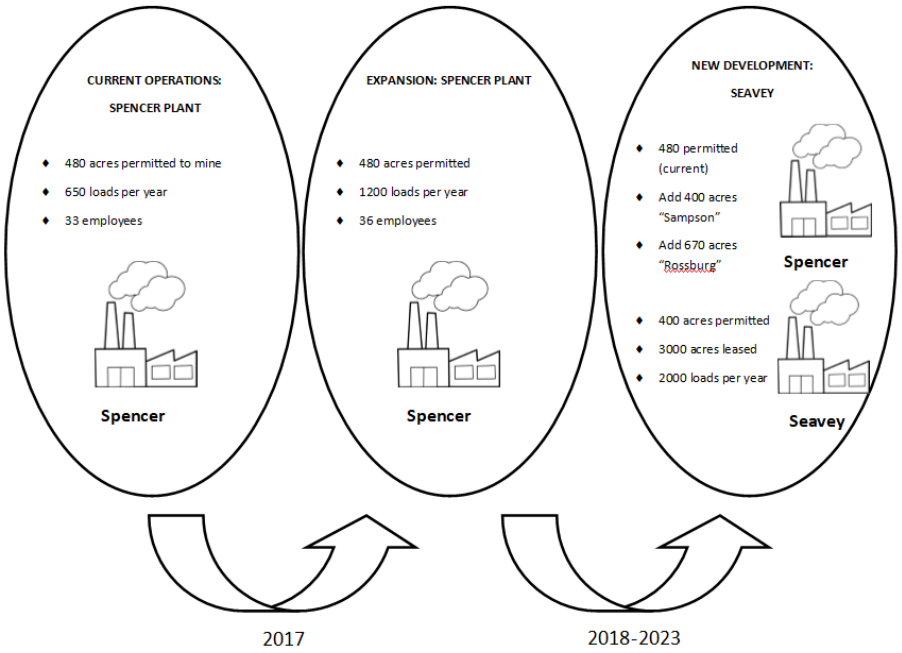
PROJECT OVERVIEW

American Peat Technology is a peat harvesting and beneficiating[1] company located near Aitkin, Minnesota. It uses a process to first dry the peat before turning it into a granular product. Through additional processing, American Peat Technology makes the granular product into one of two primary goods. The first product (BioApt) is for the agricultural market. It helps provide bacteria to crops, such as soybeans, lentils, peas, and peanuts, to assist with nitrogen fixation. This increases the productivity of the crop. American Peat Technology markets the product to inoculation companies. The second product (AptSorb) assists in the removal of heavy metals from water. Industries requiring water treatment for dissolved heavy metals are the main market for this product.[2]

Both markets have rapidly expanded. Thus, American Peat Technology has been growing and plans to continue its growth. It currently operates a plant in Spencer Township of Aitkin County (Spencer plant). At the Spencer plant, American Peat Technology produced 650 loads per year with 33 employees in 2017. The company is currently permitted to mine 480 acres at the plant (Chart 1).

Chart 1: Diagram of American Peat Technology Expansion and Development Plans



To meet growth in demand, American Peat Technology is planning two expansions. First, it is expanding its Spencer plant. Primarily, this expansion includes adding and improving dryer technology. The expansion work is nearly complete. And while the expansion still relies on the 480 permitted acres of resource, the capacity of the Spencer plant will increase to 1,200 loads per year. American Peat Technology will also increase employment to 36 workers.

Additionally, American Peat Technology is actively pursuing the development of a new harvest area and processing facility. The facility (Seavey) will access a new peat resource. The company holds state and county leases for 3,000 acres of peat resource. The company anticipates 400 acres will be

[1] In the mining industry, beneficiation is any process that improves the economic value of the product.
[2] To learn more, visit americanpeattech.com.

permitted for harvesting. The Seavey harvest area and processing facility would produce 2,000 loads per year with 40 employees. Full development of the Seavey harvest area and plant is expected to take about two years to complete. The project will begin when all permits have been obtained.

As part of the new development, American Peat Technology also plans to increase its permit to mine at the Spencer plant. The company plans to add 400 acres at the Sampson peat deposit and eventually another 670 acres at the Rossburg peat resource. This will increase the longevity of the Spencer plant.

Upon completion of the company's planned full expansion and development, American Peat Technology will produce 3,200 loads per year and employ 76 people.

The company is interested in understanding its current economic value to the community and how its planned expansion will affect the economy. It asked University of Minnesota Extension to perform an economic contribution analysis study. Extension looked at four scenarios, which included:

1) The current economic contribution of the Spencer plant. This is the current contribution of American Peat Technology, or the baseline.
2) The economic contribution from operations of a fully expanded American Peat Technology. This is the future contribution the company will make when expansion is complete.
3) The economic contribution of an expansion of the Spencer plant. This looks at the first phase of growth. It includes both short-term construction and longer-term operational impacts.
4) The potential economic contribution of the building and development of the Seavey harvest area and processing facility. This looks at the second phase of growth. It includes both short-term construction and longer-term operational impacts.

The first two scenarios focus on operations. They show the current day-to-day contribution of American Peat Technology (2017) and at a future date (2023). These can be considered before and after scenarios. The second two scenarios highlight the contributions of American Peat Technology during the expansion. These are in-progress contributions.

This report is organized around the four scenarios and considers two study areas. First, it explores the contribution to Aitkin County. Then, it does the same for an eight-county region. For each study area, the report presents the current contribution, the potential full contribution, and then each of the individual components (at Spencer and Seavey).

American Peat Technology Scenarios

- Current economic contribution of operations (2017)
- Operational contributions of fully expanded company (2023)
- Contribution of Spencer expansion alone (phase I growth)
- Contribution of Seavey development alone (phase II growth)

About Peat and Peat Harvesting

According to the National Geographic Society, peat forms in bogs.[3] It states, "Bogs are a type of wetland with a high acid content. Like all wetlands, bogs are inhabited by marshy plants, including trees, grasses, and moss. The bog's acidity prevents this vegetation from fully decaying. This partly-decayed organic material builds up in bogs. Over millions of years, it becomes peat." Peat is a slowly renewable resource. Peat bogs in Minnesota have been accumulating for thousands of years. Generally, a peat deposit grows at a rate of one to two millimeters per year.

Since peat is accumulated organic material, it looks like earthen bricks when harvested and resembles a thick mud. Historically, a farmer would cut thick strips of peat with a sharp hoe. Companies in Minnesota typically harvest it by using tractors that scrape peat from the surface of bogs. It is collected into bricks, then pressed and dried.

American Peat Technology currently harvests at the Spencer site. Spencer is a "dry" site. It was drained over 100 years ago and has been under some type of agricultural production since then. American Peat Technology scoops the peat out with a backhoe. The company then air dries the peat and collects the driest peat in piles.

As American Peat Technology harvests the site, the company is also restoring the area to a peat-producing wetland using native species. The harvested area looks like a shallow pond with a shoreline and emergent vegetation. The restored wetland is already attracting waterfowl, migratory birds, amphibians, and fish.

The proposed Seavey harvest area is a "wet" site. Here, American Peat Technology will use different harvesting techniques. Current techniques will be modified for working in wetter conditions, including modifications to the harvesting process and removal of the peat from the site. After the harvesting is completed, the company will also restore the area through revegetation and maintenance.

According to the United States Geological Society, peat was harvested in 12 states in 2013.[4] Florida led in domestic production, contributing 73 percent, when measured in tons. Minnesota, however, had the highest number of active peat producers (nine). Florida, by comparison, had seven.

ECONOMIC CONTRIBUTION OF AMERICAN PEAT TECHNOLOGY

American Peat Technology contributes to the economy in two ways. First, it contributes on an annual basis through its daily operations. This includes plant operations, harvesting, and headquarter activities. Second, American Peat Technology contributes through its construction and expansion activities. These impacts occur as the company experiences growth. Economic contribution is measured in output (sales), employment, and labor income. Employment is measured as one job, regardless if the job is full-time, part-time, or seasonal.

Employment Defined

In this analysis, one job is one job, regardless if it is part-time, full-time, or seasonal.

[3] National Geographic Society. (2011). Peat: the forgotten fossil fuel. Retrieved from https://www.nationalgeographic.org/media/peat-forgotten-fuel/.
[4] United States Geological Society. (2014). Mineral industry surveys: U.S. peat producers – 2013. Reston, Virginia. Retrieved from https://minerals.usgs.gov/minerals/pubs/commodity/peat/dir-2013-peat.pdf.

Economic contribution can be measured in different economies. Since the plant is in Aitkin County, this study begins by analyzing the impact on the county. However, the functional economy, based on where employees live and where American Peat Technology's suppliers are located, includes the counties surrounding Aitkin County. This is the regional economy and includes Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine counties. The regional impact is also presented in this analysis.

Economic contribution is comprised of direct, indirect, and induced effects. Direct effects include spending and employment by American Peat Technology itself. Indirect and induced effects are the "ripple effects" felt in other industries as the result of the company's spending. The total effect is the sum of direct, indirect, and induced effects.

Types of Effects

Direct: Spending and employment by American Peat Technology

Indirect: Activity generated by American Peat Technology's spending for goods and services (business to business spending)

Induced: Activity generated by American Peat Technology's employees' spending (consumer to business spending)

Indirect effects are those associated with a change in economic activity due to spending for goods and services directly tied to the company. As American Peat Technology makes purchases, this creates an increase in purchases across the supply chain. Indirect effects are the sum of these changes across an economy.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. These are economic changes related to spending by people directly employed by American Peat Technology. Induced effects are the sum of these changes across an economy. They also include household spending related to indirect effects.

Map 1: Aitkin County, Minnesota

Input-output models trace the flow of dollars throughout a local economy and capture the indirect and induced, or secondary, effects of an economic activity. To quantify the indirect and induced effects of American Peat Technology for this analysis, the direct effects were entered into the input-output model, IMPLAN. This analysis uses IMPLAN version 3.0 with SAM multipliers.[5]

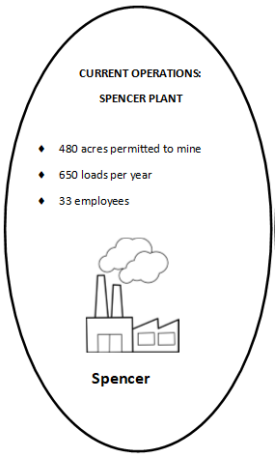
Contribution to Aitkin County

This section of the report examines the contributions of American Peat Technology to Aitkin County's economy.

Current American Peat Technology Operations

American Peat Technology currently operates a plant in Spencer Township of Aitkin County. In fiscal year (FY) 2017, the plant produced 650 loads of peat per year. American Peat Technology has a permit to mine 480 acres at this site and is currently mining 130 acres.

[5] www.implan.com



Direct Effects in Aitkin County

The direct effect of the Spencer plant is local spending, employment, and labor income by the company. In FY 2017, American Peat Technology spent $5.4 million at Aitkin County businesses, including $1.6 million in labor income to workers living in the county (Table 1).[6] The Spencer plant employed 33 people.

Total Effects in Aitkin County

In fiscal year 2017, American Peat Technology contributed an estimated $10.1 million to Aitkin County's economy. This includes $2.8 million of income for residents of the county. The company supported 69 jobs. This includes direct, indirect, and induced effects.

In 2017, American Peat Technology currently contributed $10.1 million and 69 jobs to Aitkin County's economy.

Table 1: Economic Contribution of American Peat Technology's Current Operations, Aitkin County, Fiscal Year 2017

	Direct Aitkin Facility	Indirect Business-Business	Induced Consumer-Business	Total
Spending in county (millions)	$5.4	$4.1	$0.6	$10.1
Employment	33	30	6	69
Labor Income (millions)	$1.6	$1.0	$0.2	$2.8

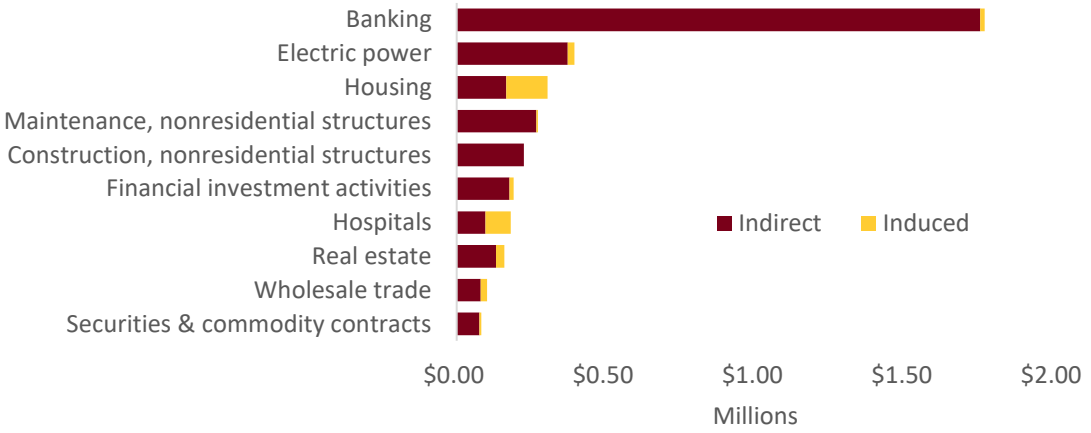
This table shows the contribution of the current operations of the company; estimates by Extension Center for Community Vitality

Top Industries Impacted in Aitkin County

American Peat Technology spent $5.4 million at Aitkin County businesses. This, in turn, generated an additional $4.7 million of activity at businesses other than American Peat Technology. Understanding where those impacts occur help show how the company interacts with the economy. Chart 2 shows the top industries benefiting from American Peat Technology spending. It includes only the indirect and induced effects.

[6] Figures are for the fiscal year. American Peat Technology's fiscal year runs from October 1 to September 30. American Peat Technology provided employee zip codes to Extension. These figures reflect total wages and benefits paid to workers with an Aitkin County zip code.

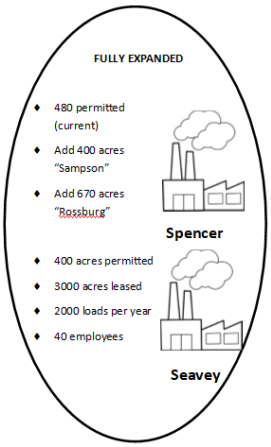
Chart 2: Top 10 Sectors Impacted by American Peat Technology Operations, Indirect and Induced Effects, FY 2017, Aitkin County



The business-to-business (indirect) impacts are notable. The direct spending of $5.4 million supports another $4.1 million of activity and 30 jobs at other businesses in the county. For every one job at the plant, there is one job at another business in the county. The top Aitkin County sectors impacted by American Peat Technology include banking, electric power, and housing. The high impacts in banking derive from a variety of factors. First, American Peat Technology banks within Aitkin County. Therefore, direct expenditures in the banking sector are relatively high. Second, the banking sector tends to have relatively high indirect and induced effects of its own.

Fully Expanded American Peat Technology

American Peat Technology's product has strong market demand. Demand has fueled sales growth. In turn, this growth has caused the need for expansion. As noted, the company is expanding its Spencer plant and planning to develop a new location with a processing facility and harvest area (Seavey).



This section highlights the operations contribution of a fully expanded American Peat Technology. This is the contribution the company will make to the county's economy in 2023.[7] The following two sections will explore the individual impact of the two growth phases.

First, however, it is valuable to understand how a fully expanded American Peat Technology will affect the economy. Upon completion of the planned full expansion and development, American Peat Technology will produce 3,200 loads per year and employ 76 people.

[7] Assumes expansion is complete by 2023.

Direct Effects in Aitkin County

After fully expanding, American Peat Technology will spend an estimated $12.5 million annually in Aitkin County (Table 2). This includes $3.7 million in labor income to its workers who are residents of the county.

> American Peat Technology, upon completion of growth and expansion plans, would support $23.4 million in activity and 161 jobs in Aitkin County.

Total Effects in Aitkin County

A fully expanded American Peat Technology would contribute an estimated total of $23.4 million of economic activity annually in Aitkin County. This includes $6.3 million in income to Aitkin County residents.[8] The company would support employment for 161 people in the county.

Table 2: Economic Contribution of Fully Expanded American Peat Technology, Operations, Aitkin County

	Direct Aitkin Facility	Indirect Business-Business	Induced Consumer-Business	Total
Spending (millions)	$12.5	$9.4	$1.5	$23.4
Employment	76	70	15	161
Labor Income (millions)	$3.7	$2.2	$0.4	$6.3

Includes both Spencer and Seavey operations; estimates by Extension Center for Community Vitality

Top Industries Impacted in Aitkin County

While American Peat Technology will spend more in Aitkin County once fully expanded, its expenditure pattern is not expected to change significantly. Therefore, the top industries impacted will be similar to the industries impacted under its current operations.

Expansion at the Spencer Plant

The previous section highlighted the total impact of a fully expanded company. This section specifically looks at the impact related to the expansion of the current Spencer plant. This is phase I of the expansion.

American Peat Technology began expansion efforts at the Spencer plant in 2014, and they were nearly complete at the end of 2017. Upon final project completion, production at the Spencer plant will more than double to 1,200 loads per year. The project was conducted in two stages.

In the first phase of the project, American Peat Technology added a new dryer, which featured a wood combustor and a new drying process with a belt dryer.

[8] Includes labor income to American Peat Technology employees and to employees at other businesses in the county affected by the company's operations.

The second phase of the project involved installing a second combustor, dryer, and cyclone to dry enough raw peat to match the capacity of the belt dryer. The other part of the construction project was to develop the equipment and methods to handle wet or frozen peat throughout the year to maintain production levels.

Direct Effects of Spencer Plant Expansion in Aitkin County

There are two types of direct effects for the Spencer plant expansion. First, there are construction effects. Direct output is the company's total construction expenditure. In addition to the direct effects of construction, the Spencer plant expansion will also increase operational activity.

Direct Effects from Construction of the Spencer Plant Expansion

Employment encompasses the number of construction workers required to complete the work; labor income is payment to those construction workers. American Peat Technology provided University of Minnesota Extension with its planned construction budget. Direct employment and labor income were estimated with IMPLAN.

American Peat Technology's current construction expenses for the Spencer plant expansion are $9.8 million (Table 3). Equipment purchases comprise 66 percent of expenditures.[9] The IMPLAN model estimates that, for $9.8 million of construction investment, 35 construction workers will be hired and paid an estimated $1.7 million. These will be short-term impacts ending when construction is completed.

Direct Effects from Operations at an Expanded Spencer Plant

Increased operations will require additional employees and increased expenditures. At this time, American Peat Technology anticipates the expansion will create three full-time equivalent positions. Based on that, the total number of jobs at the company would increase to 36.

Total Effects of Spencer Plant Expansion in Aitkin County

Construction of the Spencer plant expansion has created an estimated $11.0 million of activity in Aitkin County during the three years of development (Table 3). It has supported 47 jobs and $2.0 million in labor income. These impacts will dissipate with time as the construction ends.

Once the construction expansion is complete, American Peat Technology will operate with higher expenditures and more employment. Annually, the expanded Spencer plant will contribute an estimated $11.0 million of economic activity. This includes $3.0 million in labor income to Aitkin County residents, including American Peat Technology employees and employees at businesses supported by the company's operations. The plant will support 76 jobs. These impacts will be annual, as long as the plant operates at capacity.

American Peat Technology's Spencer plant expansion supported 47 jobs during construction. Going forward, it will support 76 jobs annually in Aitkin County.

[9] Please see "Notes on the Analysis" section for more information on how the construction direct effects were calculated.

Table 3: Economic Contribution of American Peat Technology Expansion at the Spencer Plant, Aitkin County

Metric	Construction Impacts 2014-2017				Operational Impacts 2018-Forward			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Spending (millions)	$9.8	$0.5	$0.7	$11.0	$5.9	$4.4	$0.7	$11.0
Employment	35	5	7	47	36	33	7	76
Labor Income (millions)	$1.7	$0.1	$0.2	$2.0	$1.8	$1.0	$0.2	$3.0

Estimates by Extension Center for Community Vitality

Development of Seavey

Expansion at the Spencer plant is key for American Peat Technology to meet customer needs. It also has sufficient demand to expand at an additional location with a new harvest area and processing facility. American Peat Technology is currently actively pursuing a lease for Seavey. Expansion at this site would increase the company's production to a total of 3,200 loads per year, or 8.0 tons per hour. Of this amount, 1,200 loads will be produced at the Spencer plant and 2,000 loads will be produced at Seavey.

Like the Spencer plant expansion, construction at the Seavey facility and harvest area would affect the economy in two ways. First, there will be short-term construction impacts. Development of the facility and harvest area is expected to take two years. Thus, construction effects will be spread across that time. There will also be long-term operational impacts that will be annual as long as the facility is operational.

Direct Effects of Seavey Development in Aitkin County

The Seavey processing facility is expected to be about 75,000 square feet.

Direct Effects from Construction Development at Seavey

Based on estimates provided in December 2017, the plant is expected to cost $3 million to build and $14 million to outfit with appropriate equipment. The IMPLAN model estimates $17.0 million in construction investment with 150 construction workers hired and paid an estimated $5.5 million.

Direct Effects from Operations of Seavey Development

The new Seavey facility and harvest area will also increase American Peat Technology's output and employment for daily operations. Current estimates anticipate 40 employees at the new facility. Extension assumed American Peat Technology's spending for local inputs and labor income would increase proportionally. In other words, current spending patterns would apply to the new facility.

Total Effects of Seavey Development in Aitkin County

Proposed construction to develop the Seavey harvest area and processing facility would generate an estimated $20.9 million of economic activity in Aitkin County (Table 4). This includes $6.5 million in labor income. The construction phase would support 180 jobs in the county. These impacts will be noticeable in the economy during the construction phase. After construction, the effects will dissipate.

> American Peat Technology's Seavey development will support 180 jobs during construction. Going forward, it will support 83 jobs annually in Aitkin County.

Once Seavey is operational, it will employ an estimated 40 people. In total, Seavey's operations will generate an estimated $12.2 million in economic activity in Aitkin County, including $3.3 million in labor income. The plant will support 83 jobs.

Table 4: Economic Contribution of American Peat Technology's Seavey Development, Aitkin County

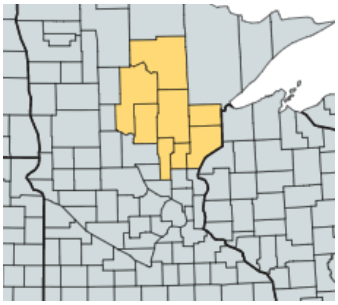
Metric	Construction Impacts 2018-2023				Operational Impacts 2023-On			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Spending (millions)	$17.0	$1.5	$2.4	$20.9	$6.5	$4.9	$0.8	$12.2
Employment	150	10	20	180	40	36	7	83
Labor Income (millions)	$5.5	$0.4	$0.6	$6.5	$1.9	$1.2	$0.2	$3.3

Estimates by Extension Center for Community Vitality

Contribution to Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine Counties

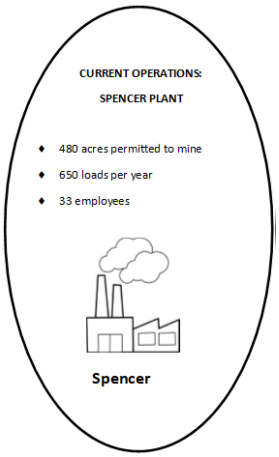
In addition to Aitkin County, American Peat Technology also affects the regional economy. In this study, the regional economy includes Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine counties. This section examines the contributions to the eight-county region.

Map 2: Eight County Region



Current American Peat Technology Operations

As explained, American Peat Technology currently operates a plant in Spencer Township of Aitkin County. This section looks at the contribution American Peat Technology made to the region in 2017.



Direct Effects in Region

The direct effect of the Spencer plant is regional spending, employment, and labor income by the company. In FY 2017, American Peat Technology spent $9.2 million at regional businesses and $2.6 million in labor income to workers living in the region (Table 5). The Spencer plant employed 33 people.

> **American Peat Technology currently contributes $18 million and 95 jobs to the eight-county regional economy.**

Total Effects in Region

In FY 2017, American Peat Technology contributed $18.0 million of economic activity to the economy of Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine counties. This includes $5.1 million of labor income and 95 jobs.

Table 5: Economic Contribution of American Peat Technology's Current Operations in Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs and Pine Counties, Fiscal Year 2017

	Direct Aitkin Facility	Indirect Business-Business	Induced Consumer-Business	Total
Spending in Region (millions)	$9.2	$7.4	$1.4	$18.0
Employment	33	50	12	95
Labor Income (millions)	$2.6	$2.1	$0.4	$5.1

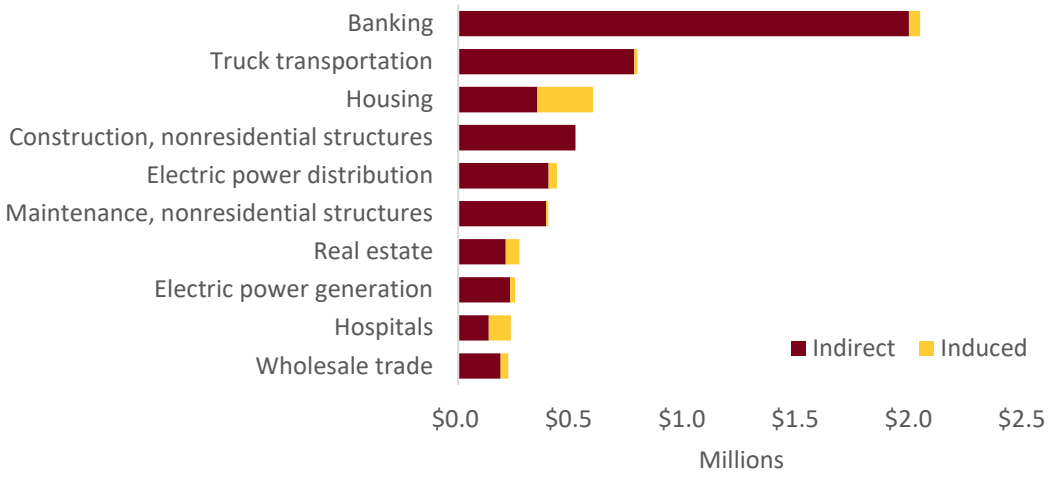
Estimates by Extension Center for Community Vitality

Top Industries Impacted in the Region

American Peat Technology spent $9.2 million at businesses in the eight-county region. This, in turn, generated an additional $8.8 million of activity at businesses other than American Peat Technology. Chart 3 shows the top industries benefiting from the company's spending in the region.

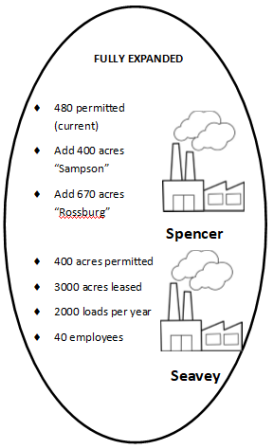
As with the impacts in Aitkin County, the banking sector is highly impacted by American Peat Technology's business in the region. Regionally, however, American Peat Technology generates a significant amount of activity in the truck transportation sector.

Chart 3: Top 10 Sectors Impacted by American Peat Technology Operations, Indirect and Induced Effects, FY 2017, Eight-County Region



Fully Expanded American Peat Technology

As mentioned, American Peat Technology is expanding at its current Spencer plant and developing a plan for the Seavey harvest area and processing facility. Upon completion of the planned full expansion and development, American Peat Technology will produce 3,200 loads per year and employ 76 people. This section examines the annual operational contributions of a fully expanded company. This is the potential impact in 2023.



Direct Effects in Region

After fully expanding, American Peat Technology will spend an estimated $21.2 million in the eight-county region (Table 6). This includes $11.8 million in income to residents.

Total Effects in Region

A fully expanded American Peat Technology would contribute an estimated total of $41.4 million of economic activity annually in the eight-county region. This includes $11.8 million in income to regional residents, including American Peat Technology employees and those at other businesses supported by the company. The company would support employment for 221 people.

American Peat Technology, upon completion of growth and expansion plans, would support $41.4 million in activity and 221 jobs in the region.

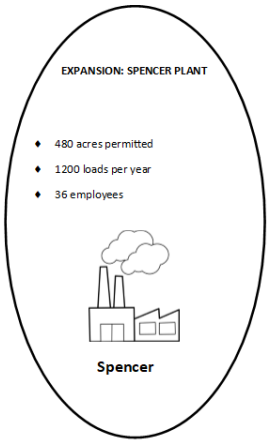
Table 6: Economic Contribution of Fully Expanded American Peat Technology, Operations, in Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs and Pine Counties

	Direct Aitkin Facility	Indirect Business-Business	Induced Consumer-Business	Total
Spending (millions)	$21.2	$17.0	$3.2	$41.4
Employment	76	115	30	221
Labor Income (millions)	$6.0	$4.9	$0.9	$11.8

Estimates by Extension Center for Community Vitality

Expansion at the Spencer Plant

The previous section highlighted the total impact of a fully expanded company. This section specifically looks at the impact related to the expansion of the current Spencer plant. This is phase I of the expansion.



Direct Effects of Spencer Plant Expansion in Region

There are two types of direct effects related to the Spencer plant expansion. First, there are construction effects. Direct output is the company's total construction expenditure. Employment encompasses the number of construction workers required to complete the work; labor income is payment to those construction workers. In addition to the direct effects of construction, the Spencer plant expansion will also increase operational activity. Increased operations will require additional employees and increased expenditures.

Direct Effects from Construction of the Spencer Plant Expansion

American Peat Technology's expenses to date for the expansion at the Spencer plant are $9.8 million. Equipment purchases account for 66 percent of expenditures. The IMPLAN model estimates that, for $9.8 million of construction investment, 35 construction workers will be hired and paid an estimated $1.7 million. These will be short-term impacts, ending when the construction is completed.

Direct Effects from Operations at an Expanded Spencer Plant

At this time, American Peat Technology anticipates the expansion will create three full-time equivalent positions. Based on that, the total number of jobs would increase to 36.

American Peat Technology's Spencer plant expansion supported 49 jobs during construction. Going forward, it will support 104 jobs annually in the region.

Total Effects of Spencer Plant Expansion in Region

Construction of the Spencer plant expansion has created an estimated $11.5 million of activity in the eight-county region during three years of development (Table 7). It has supported 49 jobs and $2.2 million in labor income. These impacts will dissipate with time as the construction ends.

Once the construction expansion is complete, American Peat Technology will operate with higher expenditures and more employment. Annually, the expanded Spencer plant will contribute an estimated $19.5 million of economic activity to the region. This includes $5.5 million in income to regional residents. The plant will support 104 jobs. These impacts will be ongoing, as long as the plant operates at capacity.

Table 7: Economic Contribution of American Peat Technology Expansion at the Spencer Plant, in Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs and Pine Counties

Metric	Construction Impacts 2014-2017				Operational Impacts 2018-Forward			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Spending (millions)	$9.8	$0.6	$1.1	$11.5	$10.0	$8.0	$1.5	$19.5
Employment	35	5	9	49	36	55	13	104
Labor Income (millions)	$1.7	$0.2	$0.3	$2.2	$2.8	$2.3	$0.4	$5.5

Estimates by Extension Center for Community Vitality

Development of Seavey

Like the Spencer plant expansion, construction of the Seavey harvest area and processing facility would affect the economy in two ways. First, there will be short-term construction impacts during the two years of site development. There will also be long-term operational impacts that will be annual as long as the facility is in operation. This is phase II of the expansion.

Direct Effects of Seavey Development in Region

The Seavey processing facility is expected to be about 75,000 square feet.

Direct Effects from Construction Development at Seavey

At this time, the plant is expected to cost $3 million to build and $14 million to outfit with appropriate equipment. The IMPLAN model estimates for $17.0 million of construction investment with 150 construction workers hired and paid an estimated $5.5 million.

Direct Effects from Seavey Development Operations

A new facility will also increase American Peat Technology's output and employment for daily operations. Current estimates anticipate 40 employees at the new facility. Extension assumed American Peat Technology's spending for local inputs and labor income would increase proportionally.

Total Effects of Seavey Development in Region

Proposed construction at the Seavey harvest area and processing facility would generate an estimated $22.1 million of economic activity in the region (Table 8). This includes $6.9 million in labor income. The construction phase would support 190 jobs. After construction, the effects will dissipate.

Once Seavey is operational, it will employ an estimated 40 people. In total, the Seavey operation will generate an estimated $21.8 million of economic activity in the region, including $6.3 million in labor income. The plant will support 114 jobs.

American Peat Technology's Seavey development will support 190 jobs during construction. Going forward, it will support 114 jobs annually in the eight-county region.

Table 8: Economic Contribution of American Peat Technology's Seavey Development, in Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs and Pine Counties

Metric	Construction Impacts				Operational Impacts			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Spending (millions)	$17.0	$1.5	$3.6	$22.1	$11.2	$8.9	$1.7	$21.8
Employment	150	10	30	190	40	60	14	114
Labor Income (millions)	$5.5	$0.4	$1.0	$6.9	$3.2	$2.6	$0.5	$6.3

Estimates by Extension Center for Community Vitality

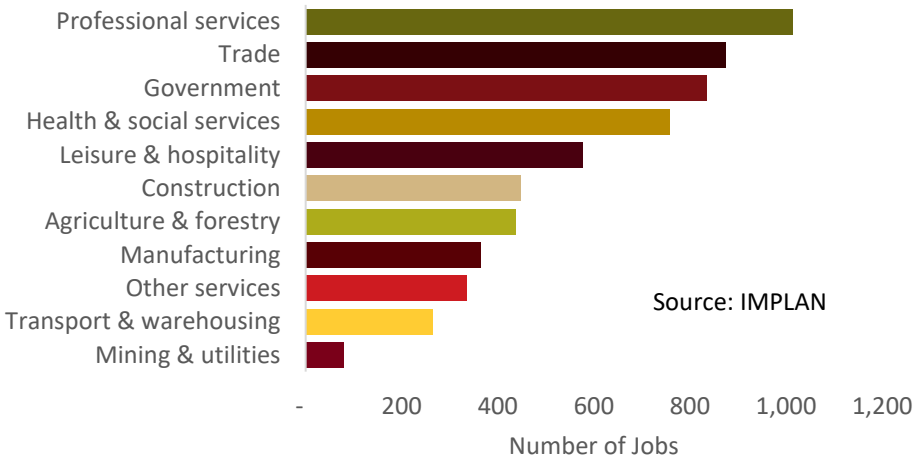
AMERICAN PEAT TECHNOLOGY IN CONTEXT OF THE ECONOMY

Aitkin County is located in East Central Minnesota. Two major bodies of water—the Mississippi River and Mille Lacs Lake—and the county's central location to the port of Duluth, helped define its early economy. Native Americans valued the area for its rich hunting, fishing, and land. White settlers arrived in the early 1800s. Eventually, the Northern Pacific Railroad came to Aitkin County, and the railroad opened up lumbering and commerce. Riverboats also brought commerce to the region.[10]

Aitkin County's economy has transitioned since the area's beginnings. Its rich natural assets have drawn tourism and retirees to the county, fueling the economy. The professional services industry, including jobs in sectors such as finance, insurance, real estate, and administration, is the largest employment industry in the county (Chart 4). Other top industries for employment include trade (both wholesale and retail), health, and social services. In 2016, there were 5,980 jobs in the county.[11]

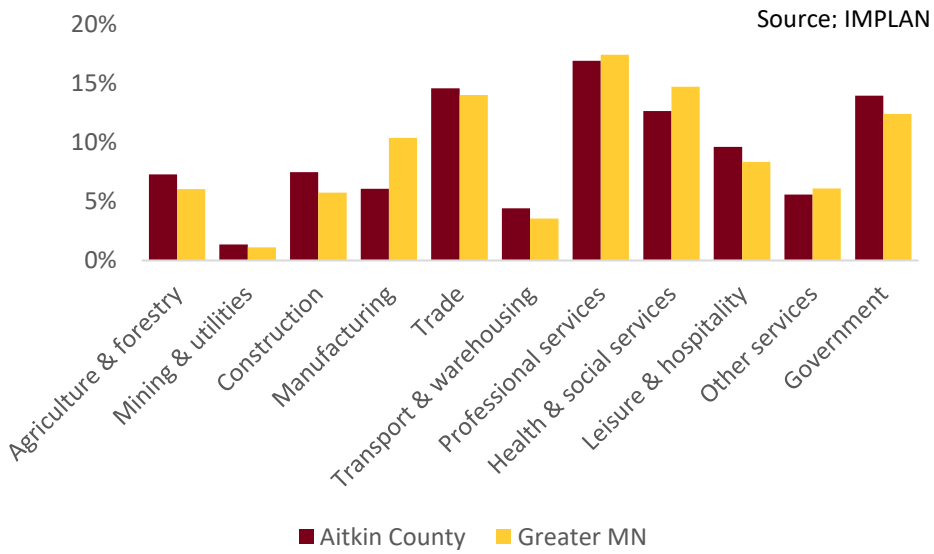
[10] History drawn from Aitkin County website (https://www.co.aitkin.mn.us/visitor/history.html) and Wikipedia (https://en.wikipedia.org/wiki/Aitkin,_Minnesota).
[11] In the database used here, one job is one job, regardless if it is full-time, part-time, or seasonal.

Chart 4: Employment by Industry, Aitkin County, 2016



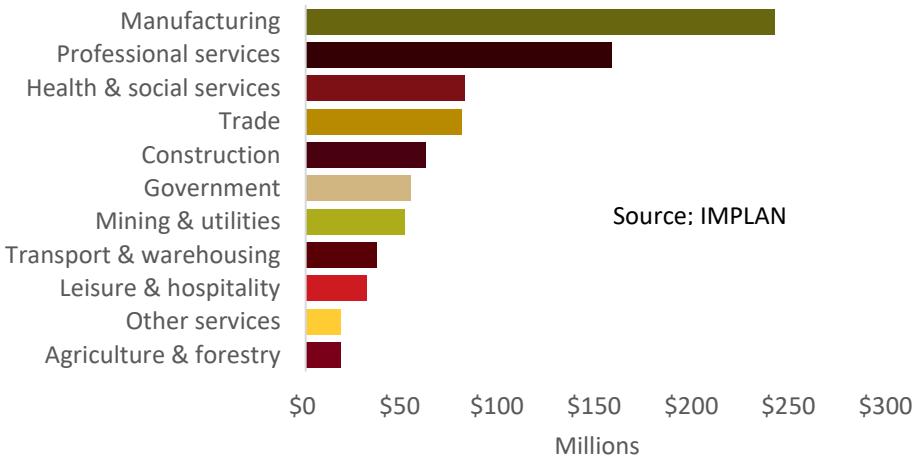
In many ways, Aitkin County's economy mirrors that of Greater Minnesota (Chart 5), although it has a slightly higher percentage of jobs in agriculture and forestry, construction, trade, and leisure and hospitality. This reflects the county's strengths in logging, tourism, and second home ownership.

Chart 5: Percent of Employment by Industry, Aitkin County Versus Greater Minnesota, 2016



In 2016, Aitkin County businesses and enterprises produced $833 million of output (sales). In terms of output, the manufacturing industry is the largest in Aitkin County (Chart 6). The professional services and health and social service industries are second and third largest.

Chart 6: Output by Industry, Aitkin County, 2016



NOTES ON THE ANALYSIS

There are a couple of important notes related to this analysis.

Calculating Construction Impacts

In input-output theory, only expenditures made at local companies will create additional activity within the defined region. Purchases from companies outside the region represent leakages, or money leaving the economy. Construction costs such as building, labor, electrical, and installation are all local, as the activity is occurring at the plant site. Equipment, however, is highly specialized and not often manufactured in the region. Given this, equipment purchases were analyzed as wholesale trade sector purchases, and the local purchase coefficient was set to IMPLAN model defaults.

Limitations to Data

The data, analysis, and findings described in this report are specific to the geography, period, and project requirements of American Peat Technology. Findings are not transferable to other jurisdictions. University of Minnesota Extension neither approves nor endorses the use or application of findings and other contents in this report by other jurisdictions.

APPENDIX: DEFINITIONS AND TERMS

Special models, called input-output models, exist to conduct economic impact analysis. There are several input-output models available. IMPLAN (IMpact Analysis for PLANning, Minnesota IMPLAN Group) is one such model. Many economists use IMPLAN for economic impact analysis because it can measure output and employment impacts, is available on a county-by-county basis, and is flexible for the user. IMPLAN has some limitations and qualifications, but it is one of the best tools available for input-output modeling. Understanding the IMPLAN tool, its capabilities, and its limitations will help ensure the best results.

One of the most critical aspects of understanding economic impact analysis is the distinction between the local and non-local economy. The local economy is identified as part of the model-building process. Either the group requesting the study or the analyst defines the local area. Typically, the study area (the local economy) is a county or a group of counties that share economic linkages. This analysis considers two study areas—Aitkin County and the eight-county region (Aitkin, Carlton, Cass, Crow Wing, Itasca, Kanabec, Mille Lacs, and Pine counties).

To properly read the results of an IMPLAN analysis, a few definitions are essential. These terms and their definitions are provided below.

Output

Output is measured in dollars and is equivalent to total sales. It includes significant double counting. Think of peat, for example. The value of the peat is counted when American Peat Technology pays a royalty rate to the landowner and then again when it is sold to the inoculation company. It is also counted when sold to the agricultural producer as an agricultural input. The value of the peat is built into the price of each of these items, and then the sale of each item is added to reach total sales (or output).

Employment

Employment includes full- and part-time workers and is measured in annual average jobs, not full-time equivalents (FTEs). IMPLAN includes total wage and salaried employees, as well as the self-employed, in employment estimates. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric.

Labor Income

Labor income measures the value added to the product by the labor component. So, in the peat example, when American Peat Technology pays a royalty to the landowner, a certain percentage of the sale is credited to the landowner for his effort. Then, when American Peat Technology sells the peat to the inoculation company, it includes some markup in the price for its labor costs. Finally, the inoculation company adds a mark-up for its labor before selling the peat to the agricultural producer. These individual value increments for labor can be measured, which amounts to labor income. Labor income does *not* include double counting.

Direct Impact

Direct impact is equivalent to the initial activity in the economy. In this study, it is spending by American Peat Technology.

Indirect Impact

The indirect impact is the summation of changes in the local economy that occurs due to **spending for inputs** (goods and services) by the industry or industries directly impacted. For instance, if employment at a peat processing plant increases by 100 jobs, this implies a corresponding increase in sales from the plant. As the plant increases sales, it must also purchase more inputs, such as electricity and equipment. As the plant increases the purchase of these items, its suppliers must also increase production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts. In this study, indirect impacts are those associated with spending by American Peat Technology.

Induced Impact

The induced impact is the summation of changes in the local economy that occurs due to **spending by labor**. For instance, if employment at a peat processing plant increases by 100 jobs, the new employees will have more money to spend on housing, groceries, and going out to dinner. As they spend their new income, more activity occurs in the local economy. Induced impacts also include spending by labor generated by indirect impacts. So, if American Peat Technology purchases services from a local tax preparer, spending of the tax preparer's wages would also create induced impacts. Primarily, in this study, the induced impacts are the economic changes related to spending by American Peat Technology's employees.

Total Impact

The total impact is the summation of the direct, indirect, and induced impacts.

Input-Output, Supply and Demand, and Size of Market

Care must be taken when using regional input-output models to ensure they are being used in the appropriate type of analysis. If input-output models are used to examine the impact of an industry so large that its expansion or contraction results in major supply and demand shifts, causing the prices of inputs and labor to change, they can overstate the impacts. It is not likely American Peat Technology has an impact on national input prices. Hence, the IMPLAN model should reliably estimate the impacts.